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DISEASES OF CEREALS AND FORAGE CROPS

BACTERIAL WILT IN CORN IN ILLINOIS

Benj. Koehler and J. R. Holbert

Losses from bacterial wilt (caused by Aplanobacter stewartii) are worse in the present year than in any we have record of, although 1931 was also outstanding. Many early sweet corn fields in the market garden districts blighted so completely that the fields were plowed up when the corn was in the young plant stage and the land planted to other crops. Sweet corn losses appear to run from 90 per cent in early market varieties to 30 per cent in the later canning varieties.

Bacterial wilt also is unusually evident in dent corn this year. On June 22 some plants were observed wilting in an otherwise thrifty field. An examination showed yellow vascular bundles and decayed cavities in the lower end of the young stalks. A number of these plants died. A few weeks later, plants with cavities and yellow bundles were found in a number of other commercial fields of dent corn.

A second stage of the disease, much more extensive and in the aggregate more destructive, began at the time of the hot weather in the middle of July. This is a leaf blight and appears to be caused by the same organism. New lesions have been appearing daily up to the present time. Throughout the north central part of the State all corn fields show the effect of it and most of them appear from a distance as though they had been injured by frost. On close examination, however, the blighting is distinct from cold or heat injury or other types of firing. In badly infected fields where half the green leaf area has been lost, most of the plants show some yellow vascular bundles when cut. Cavities, however,

are absent in these later infections. In fields less severely infected, yellow bundles can be found, but only in relatively few plants. A survey to determine more accurately the extent and limits of the disease is about to be made.

BACTERIAL WILT OF CORN IN NEW ENGLAND

Neil E. Stevens

For the first time in the history of Plant Pathology bacterial wilt (Stewart's disease) caused in 1932 serious commercial loss in New England. Previous to this season, reports of its occurrence in this region have been confined to occasional diseased plants, mostly in Massachusetts. Many of these were noted during the war years when an unusual number of small gardens were planted.

The record for Connecticut is particularly significant. Dr. G. P. Clinton is just completing 30 years of service as Botanist in the Connecticut Experiment Station, and he states that during that period he has never, previous to this year, observed a single case of Stewart's disease in the State. This in spite of the fact that because of his interest in Stewart's work at the time of the original publication, he has at various times made special search for the disease.

This year Clinton first noted the occurrence of the disease in Connecticut, June 9, and somewhat later he observed initial infections and consequent crop losses amounting in some cases to 20 per cent in the earliest varieties of sweet corn in the towns of Westville and Milford. The growers' estimates of losses in these fields ran as high as 50 per cent. Losses in later varieties were much smaller, while in certain small experimental plantings they were greater.

There is no direct evidence as to whether the greater abundance of the disease in the earliest plantings is due to the variety or the time of planting but it seems probable that the time of planting played a part since later plantings of the same varieties made for seed purposes, examined August 19, were notably free of the disease.

During the period August 22 to 26, a survey in Massachusetts was made in company with Dr. O. C. Boyd which resulted in finding various fields of early sweet corn showing 2 per cent primary infections in Hampden County. Occasional plants dead from the disease were found in Franklin and Worcester Counties near the New Hampshire line. Near the northern edge of Middlesex County 3 to 5 per cent primary infection was observed in one large field of early sweet corn and there was 1 per cent or over in several smaller fields. In the same town, Dracut, a small patch was found in which corn of the same variety had been planted

for several years which showed 10 per cent primary infection. Diseased plants were also found in Essex County. The disease was first observed in Hampshire County, July 1. Dr. Boyd notes that in all instances of marked primary infection the corn had been planted on the same site year after year, frequently with the seed saved from the previous crop on the same land.

While no intensive survey was made in the northern New England States it seems probable that the Massachusetts localities here recorded are near the northern limit of the disease this year. One Connecticut grower reports that a single lot of Golden Gem seed was divided and part planted in New Hampshire and part in Connecticut. In the Connecticut field there was from 20 to 35 per cent loss while in the New Hampshire field there was not a trace of the disease. In twenty fields of sweet corn examined in Androscoggin County, Maine, August 29, 30, and 31, not a single case of the disease could be found.

The actual loss is difficult to estimate as the matter is complicated by the Summer drought in New England. Under the conditions prevailing initial infections resulted in a total loss of the diseased plants. As to the cause of this unusual outbreak in the New England States, Dr. Clinton cites the wet weather prevailing soon after the early sweet corn was planted; the unusual dry weather later on and the unusual mild winter of 1931 - 1932. He also calls attention to the fact that bacterial diseases in general had been exceptionally abundant in Connecticut this year.

In this connection, Miss Nellie A. Brown of the Bureau of Plant Industry states that this year she has received specimens of some bacterial leafspot diseases that, to her knowledge, had not appeared for 10 years or more; and an unusual number of specimens of bacterial galls. Two lots of center rot of tomatoes, which is sometimes caused by fungi and sometimes by bacteria, were seen, both due to bacteria.

BACTERIAL WILT OF ALFALFA IN MASSACHUSETTS

O. C. Boyd

Wilt (Aplanobacter insidiosum) has caused considerably more damage to alfalfa in Massachusetts during this dry season than during the unusually wet season of 1931. In some instances, its effect was observed in the first crop although it is strikingly noticeable only in the second and third cuttings. Severe stunting and dying out of plants were not uncommon in many fields during July and August.

Incidentally, wilt was observed in Southampton Town on Long Island in 1931. When the same field was visited again this summer, latter half of August, the infection was much more widespread and severe.

DOWNY MILDEW ON SWEET CLOVER IN MONTANA

Dr. P. A. Young reports that a light infection of downy mildew (Peronospora trifoliorum) occurred on biennial yellow sweet clover in the Agronomy plots at Bozeman, in June. This fungus does not seem to be common on sweet clover according to the Survey records.

V E G E T A B L E D I S E A S E S

DISEASES OF CUCURBITS IN MASSACHUSETTS

Dr. O. C. Boyd has sent in the following notes (September 3):

DOWNY MILDEW (PSEUDOPERONOSPORA CUBENSIS): Downy mildew, which was not observed on any of the cucurbits last year, made its appearance around the middle of August this summer on the cucumber. Many late plantings are now being defoliated. As usual, the bulk of the main early crops for both pickles and green cucumbers were only slightly damaged.

Severe defoliation of muskmelons occurred in 1930, none at all in 1931, and this year it it appeared on muskmelons about August 20, somewhat later as a rule than on cucumbers. The disease is now making rapid headway in unprotected patches. Earlier varieties have been on the market for about two weeks; later ones, not yet mature.

On August 22, a single hill of summer squash planted late and then in full bearing, showed downy mildew on several leaves. Only a trace occurred on intermingled cucumbers. Today, the disease appeared to have made much more rapid progress on summer squash than on cucumber vines, causing the characteristic scorching and curling of the leaves typical of muskmelon. Also, nearby winter squash (Hubbard) leaves showed a general infection of the disease, but much more recent. This is the first time I have observed downy mildew on squashes in this State.

BLACK ROT OF SQUASH (MYCOSPHAERELLA CITRULLINA): On August 23, the organism that causes black rot of stored squash was observed fruiting on an occasional runner and stem in the field. Both pycnidia and perithecia were present, but were immature. Today, apparently fully matured fruiting bodies were observed, with Turban varieties mature and Blue Hubbards still immature. The vine infection stage of this disease is less prevalent than at the corresponding time last year, due perhaps to the generally dry weather during the first half of the summer. Due to the promising results obtained last fall in reducing black rot and other storage decays of squash by disinfecting fruits and storage rooms with formaldehyde, a number of growers are preparing to treat their crop this fall before storing.

TOMATO LEAF MOLD UNUSUALLY PREVALENT IN THE FIELD IN NEW YORK THIS YEAR

"Among the unusual vegetable diseases appearing in New York State this year is the leaf mold on tomatoes, caused by Cladosporium fulvum. So far as I am aware, this disease is rarely found in the field so far North. It is, of course, very prevalent in the greenhouses. This year it has been reported by a number of county agents as doing considerable damage and Dr. Fred W. Geise of the American Can Company makes the following comment, after sending in specimens of the trouble. "I have seen a number of fields practically destroyed by this disease." The combination of weather conditions must be unusual this season, because I have never known before so many rare types of vegetable diseases being so destructive in the State. (Charles Chupp, September 3).

TOMATO DISEASES IN VIRGINIA

The following reports were received from Harold T. Cook (August 20):

LEAF SPOT (SEPTORIA LYCOPERSICI): During the past week Septoria leaf spot has been found to be generally distributed throughout the Northern Neck section of Virginia. It is causing rather serious defoliation in some of the fields.

WILT (FUSARIUM LYCOPERSICI): Non-resistant varieties are dying rapidly from Fusarium wilt. The amount of wilt occurring in 14 strains of the Marglobe variety obtained from 12 representative seed firms varied from 4 to 58 per cent in a heavily infested field, and from 1 to 33 per cent in a moderately infested field.

OTHER REPORTS ON VEGETABLE DISEASES

BACTERIAL BLIGHT OF LIMA BEAN IN VIRGINIA: Bacterial blight of lima beans (Bacterium vignae) is prevalent in King and Queen County and on the Eastern Shore of Virginia. (Harold T. Cook).

DOWNY MILDEW ON CABBAGE IN MONTANA: Downy mildew (Peronospora parasitica) was observed on cabbage at Whitefish, Flathead County, May 19. This seems to be the first report of its occurrence in Montana. (P. A. Young).

F R U I T D I S E A S E S

NOTES ON CRANBERRY DISEASES IN MASSACHUSETTS

Neil E. Stevens

THE PROBABLE KEEPING QUALITY OF THE 1932 CROP: Comparison of the weather records of 1932 with previous years shows that the May and June

temperatures were very near normal and that there was slightly less than the average number of days with rain during July and August. This together with the results of the first series of "incubator tests" concluded September 9 indicates the probability that this crop will be in general of much better keeping quality than that of last year.

FALSE BLOSSOM: While false blossom remains the most serious cranberry disease problem in Massachusetts some progress is being made in its control and in the rehabilitation of badly infected bogs, and the cranberry growers are in a more hopeful frame of mind regarding this disease. Guided by the intensive studies of Dr. H. J. Franklin in the control of the leaf hopper which carries false blossom, many growers have carried on active flooding operations and spraying or dusting programs in order by reducing the number of leaf hoppers to check the rate of spread of the disease.

Along with this they have endeavored to encourage the growth of healthy vines by sanding and sometimes by the use of fertilizer. As a result of this there are at least half a dozen bogs in Carver, known to have been very badly infected 5 to 10 years ago which seem to be in much better condition today than 5 or even 3 years ago. In addition to this some sections of badly diseased Howes vines have been destroyed and replanted with less susceptible varieties. There is every indication that if the present campaign is seriously followed out there need be no marked falling off of cranberry production in Massachusetts.

A NEW FUNGUS FOUND ON GRAPE LEAVES FROM TEXAS

The fungus Briosia ampelophaga Cav. was found by Edith K. Cash to be associated with leaf spots of grape on specimens received from J. J. Taubenhaus, collected in Hidalgo County, Texas. There seems to be no previous record of its occurrence in North America, and it has not been reported on leaves before, having been reported in Europe only on the fruit.

FRUIT DISEASES IN MASSACHUSETTS

Reported by O. C. Boyd (September 3):

BLIGHT OF APPLE, PEAR, AND QUINCE (BACILLUS AMYLOVORUS): While blight is somewhat more noticeable than usual this summer, yet the disease has not undergone the increase reported by other States this year. In some large apple sections, no more than the usual amount is present. In some scattered localities, severe cases have been observed in both apples and pears. Likewise, quinces have shown similar degrees of infection in such localities. On the whole, however, the damage to all three, as well as other susceptible hosts, has been only slightly greater than usual.

PEACH SCAB (CLADOSPORIUM CARPOPHILUM): During August, a great deal of fruit infection of peach scab developed generally in the State where proper summer spraying or dusting was not observed. In some instances, an abundance of leaf and bark infection accompanied the fruit disease. In all cases concerned, there was heavy spotting of the 1931 wood. Those overwintering spots were still producing conidia last month, and were no doubt responsible for the unusual leaf and fruit infection this year, even in the face of a dry spring and early summer. Properly cared for commercial orchards are not so affected.

CROWN GALL (BACTERIUM TUMEFACIENS) ON BLUEBERRY: A few infected plants in one field of cultivated blueberries in Wareham. (Identification confirmed by Nellie A. Brown).

DISEASES OF TREES AND ORNAMENTALS

CYTOSPORA CANKER ON BLUE SPRUCE IN MASSACHUSETTS

This canker seems to have made unusual progress this summer in several trees under observation. This situation may be due to the extremely favorable weather for infection in the spring and early summer of 1931. As early as March 5 this year, an abundance of spore coils were observed on one-year cankers. Subsequent wet periods brought out many more crops of pycnospores. Once this disease becomes established in a tree, it destroys its symmetry, and will in time kill it if not controlled. (O. C. Boyd - September 3, 1932).

SPECIMENS RECEIVED

Helminthosporium ravenelii B. & C. on Sporobolus jacquemontii, Brazos County, Texas, J. J. Taubenhaus. Det. J. A. Stevenson.

Microsphaera alni (Wallr.) Wint. on Vaccinium pennsylvanicum var. nigrum, Cherryfield, Washington County, Maine, R. J. Haskell, August 10.

Tranzschelia punctata (Pers.) Arth. on Prunus americana, Sherman County, Texas, J. J. Taubenhaus. Det. J. A. Stevenson.